Photic sense organs.—GUTTENBERG[14] has demonstrated that two of the ombrophilous species of his local flora have a photo-sensitive epithelium, whose response consists in maintaining the leaf in the transverse heliotropic position. The mechanism is essentially the same as was found by HABERLANDT in the so-called velvet leaves, so abundant among the ombrophilous species of the tropical hydrophytic forests. The epidermal cells function as converging lenses, so that the protoplasmic membrane which covers the floor of the cell is not uniformly illuminated. In HABERLANDT'S studies the bright spot was centrally located, but GUTTENBERG finds that for his species that it is excentric, because the papillosity is not centrally located. The result is the same in both cases, for the leaf is attuned to the distribution of interior illumination which exists when the leaf is in the transverse position. Actual tests showed that the petiole is not a factor in securing this position. Curiously enough the leaf assumes the horizontal position in diffuse light, such as occurs under the open sky on a cloudy day. In this case, however, the internal distribution of light is the reverse of that which exists under parallel rays, the central area of the floor wall being dark with a margin of increasing brightness. The stimulus apparently consists in an unequal illumination of the cell lumen.—RAYMOND H. POND.

Nature of chromatophores.—MERESCHKOWSKY[15] holds that these bodies are not organs of the plant cell and never have been, but are foreign organisms which penetrated into the colorless plasma of the cells and live there as symbionts. In support of this notion he adduces the facts that the chromatophores multiply continuously by division and do not arise *de novo;* that they are in high degree independent of the nucleus; that they are completely analogous with zoochlorellae and zooxanthellae which inhabit hydras, infusoria, etc.; that there are organisms, (e. g., the lower Cyanophyceae, such as Aphanocapsis and Microcystis) which can be considered as free-living chromatophores; that certain Cyanophyceae actually live as symbionts in the cell plasma. This theory he thinks, is the only possible explanation of the polyphyletic origin of primeval plants, which were merely amoebae and flagellates into which Cyanophyceae migrated; that the green, red, and brown Cyanophyceae account for the algae of these colors; that the plant cell-wall is due to the formation, by the symbiotic chloroplasts, of carbohydrates easily polymerized into cellulose ; which wall makes impossible the further taking of solid food and entails the quiescent nature and simple organization of plants, minus nerve, muscle, and psychic life. Here is another pyramid of theory resting on its apex.—C. R. B.

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[14]GUTTENBERG, H. R., VON, Die Lichtsinnesorgane der Laubblätter von *Adoxa Moschatellina* und *Cynocrambe prostrata*. Ber. Deutsch. Bot. Gesells. **23**:265–273. *pls. 10, 11.* 1905.

[15] MERESCHKOWSKY, C., Ueber Natur und Ursprung der Chromatophoren im Pflanzenreiche. Biol. Centralbl. **25**: 593–604. 1905.